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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,185	12/18/2000	Takayuki Araki	P06971US00/L	2588
881	7590	05/18/2006		
STITES & HARBISON PLLC 1199 NORTH FAIRFAX STREET SUITE 900 ALEXANDRIA, VA 22314			EXAMINER RUTHKOSKY, MARK	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/700,185

Applicant(s)

ARAKI ET AL.

Examiner

Mark Ruthkosky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5-30 and 32-44 is/are pending in the application.
- 4a) Of the above claim(s) 1,5-29,37 and 41-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 30, 32-36 and 38-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/22/2006 has been entered. Claims 1, 5-29, 37 and 41-44 are withdrawn. Claims 30, 32-36, 38-40 are pending. Applicant has noted that claims 1 and 5-44 are pending, however, claim 31 was canceled in the paper of 6/30/2005.

### ***Claim Rejections - 35 USC § 112, 1<sup>st</sup> Paragraph***

Claims 32-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has amended the claims changing the word "fluoropolymer" to fluoromonomer." Applicant submits that this is a correction of a clear clerical error. This error results in the term fluoromonomer having no support in the specification. In order to overcome the rejection, applicant must submit a declaration swearing that this is a clerical error and provide a written translation of the foreign priority document showing the proper support for foreign priority.

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Applicant further amends claim 32 to claim segment A is a block copolymer or a graph copolymer. The specification does not provide support for segment A being a block copolymer or a graph copolymer. The specification, on page 10, line 20, states that "Segments A and B being combined in the form of blocks or a graft. Support for this amendment must be provided to overcome this rejection.

***Claim Rejections - 35 USC § 112, 2nd Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 32-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The instant claims are to a material that comprises a multi-segmented block copolymer containing at least two types of fluoropolymer chain segments (A and B) differing in monomer composition, with at least one type of the fluoropolymer chain segments containing sulfonic acid functional groups (chain segment A as defined in claim 32.) The dependent claims 32-34 state that chain segment A includes (a) an ethylenic fluoromonomer unit containing sulfonic acid functional groups; and (b) at least one type of ethylenic fluoromonomer unit copolymerizable with the unit (a) and containing no sulfonic acid functional groups. The unit (b) in claim 32 is defined to be the same as the segment B of claim 30. Further, claim 32 states that the ethylenic fluoromonomer (b) is at least one type of monomer, which allows for more than one unit, which is the same, a polymer. From this, the claims are indefinite as it is not clear in the polymer where one block begins and ends. For example, a block of subunits (B-B-B-B-B-B-

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b-b-b-b-b-b-b) is indefinite as B=b and it is not clear which elements belong to which segment or unit. Claims 33-34 depend from claim 32.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 30, 32-36 and 38-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Cisar (US 6,492,431.)

The instant claims are to a material for a solid polyelectrolyte, comprising a multi-segmented fluoropolymer that comprises a block copolymer containing at least two types of fluoropolymer chain segments differing in monomer composition, at least one type of the fluoropolymer chain segments containing sulfonic acid functional groups.

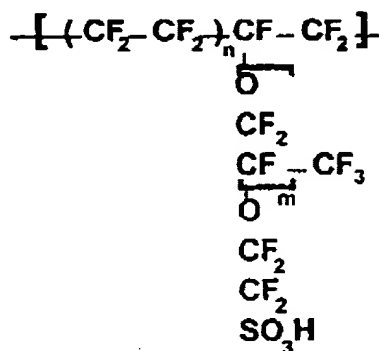
Cisar (US 6,492,431) teaches a material for a solid polyelectrolyte, comprising a multi-segmented fluoropolymer that comprises a block copolymer containing at least two types of fluoropolymer chain segments differing in monomer composition, at least one type of the fluoropolymer chain segments containing sulfonic acid functional groups.

Claims 30-36 and 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Cisar (US 5,635,039.)

Cisar (US 5,635,039) teaches a material for a solid polyelectrolyte, comprising a multi-segmented fluoropolymer that comprises a block copolymer containing at least two types of fluoropolymer chain segments differing in monomer composition, at least one type of the

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fluoropolymer chain segments containing sulfonic acid functional groups. The material is defined to be Nafion, which has the following structure:



One segment block contains polytetrafluoroethylene groups (PTFE) and another segment block contains perfluorovinyl ester with sulfonic acid functional groups. The crystalline melting point is over 300 C. The perfluorovinyl ester with sulfonic acid functional groups segment includes (a) an ethylenic fluoropolymer unit containing sulfonic acid functional groups; and (b) at least one type of ethylenic fluoromonomer unit copolymerizable with the unit (a) and containing no sulfonic acid functional groups. It is further noted that the polymer may include a sulfonyl fluoride group (col. 13, lines 7-17.) The material is commonly known as Nafion, which has an equivalent weight of 400-1600, (see col. 7, lines 45-end for a weight of 1100.) As the materials of the reference and the instant invention are equivalent, the modulus of elasticity of the materials will be the same. Thus, the claims are anticipated.

### ***Response to Arguments***

Applicant's arguments filed 6/60/2005 have been fully considered but they are not persuasive.

Rejection under 35 U.S.C. 112. The applicant argues that the amendment to claim 32 is more clearly recited by replacing the term ‘ethylenic polymer unit’ with the term “an ethylenic fluoromonomer.” This does not provide a distinction between segments A and B of claim 30. Applicant’s further argue that the amendments clarify the language of claim 30 in that the term “multisegmented polymer” is used to include both a block copolymer and a graph copolymer. While the claims have been amended to read that the multisegmented fluoropolymer comprises a block copolymer and/or a graph copolymer, this amendment does not further clarify where each segment begins and ends due to that fact that they are claimed to be formed of the same materials, particularly segments B and (b), which is claimed to be “*at least one* type of ethylenic fluoromonomer.” This, of course, is a polymer when there is more than one unit. Applicant also states that the claim amendments clarify that the segment A contains a plurality of sulfonic acid functional groups. The claim has been amended to state “one or more fluoropolymer segment A.” This actually makes the claim more confusing, as it appears that there may be multiple combinations of A and B in a variety of orders. These claims stand rejected as being indefinite as it is not clear in the polymer where one block begins and ends as the segments and units are indistinguishable. As the claimed segments encompass a large number of possible units and segments that are not specifically defined, it is not clear what will comprise each separate unit A and B. Further, the applicant uses the transitional phrase, “comprising” in the claim, which allows for various other possible units in the polymer. Thus, the claims are indefinite.

Rejections based on 35 U.S.C. 102. The applicant argues that the multi-segmented fluoropolymers taught in the Cisar references are not block copolymers, even though Cisar uses the term “block” when describing its composition. These arguments are not persuasive. The



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reference clearly states that membrane may be blended as well as alternating blocks of each type of segment described. The applicant states, 'the alternating blocks of Cisar do not mean a block of a block copolymer, but "blocks" refer to each polymer of a composite membrane comprising blended polymers.' Cisar states that the polymer may include regions of pure PTFE and regions of the proton conductive region having sulfonic acid functional groups (col. 7, lines 15-30.) The material is referred to as a polymer block-type as compared with a random polymer. Further, the reference defines the PTFE segment to provide a reinforcing matrix and the proton conductive sulfonic acid region as a high proton conductive region (see '431, col. 7, line 15 to col. 8, line 15.) These regions are equivalent to those in applicant's claimed invention. Thus, Cisar is not silent with regard to a block copolymer. The reference clearly states that the material may be a block copolymer comprising both units of PTFE and a mixed polymer with sulfonic groups included. Thus, the claims stand rejected over the applied references.

### *Examiner Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications


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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

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5-12-2006